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PCT

From the INTERNATIONAL BUREAU

**NOTIFICATION OF THE RECORDING
OF A CHANGE**

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

PENILLA, Albert, S.
Martine Penilla & Kim, LLP
710 Lakeway Drive
Suite 170
Sunnyvale, CA 94085
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 31 October 2000 (31.10.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference ADAPP183.P	
International application No. PCT/US00/18732	International filing date (day/month/year) 10 July 2000 (10.07.00)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

Name and Address VIKSNINS, Ann, S. Schwegman, Lundberg, Woessner & Kluth P.O Box 2938 Minneapolis, MN 55402 United States of America	State of Nationality	State of Residence
	Telephone No. (612) 373-6900	
	Facsimile No. (612) 339-3061	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address PENILLA, Albert, S. Martine Penilla & Kim, LLP 710 Lakeway Drive Suite 170 Sunnyvale, CA 94085 United States of America	State of Nationality	State of Residence
	Telephone No. (408) 749-6900	
	Facsimile No. (408) 749-6901	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☒ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer J. Leitao Telephone No.: (41-22) 338.83.38
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From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 21 March 2001 (21.03.01)	
International application No. PCT/US00/18732	Applicant's or agent's file reference ADAPP183.P
International filing date (day/month/year) 10 July 2000 (10.07.00)	Priority date (day/month/year) 09 July 1999 (09.07.99)
Applicant SCHNEIDER, Eric, D.	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
29 November 2000 (29.11.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
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Applicant's or agent's file reference ADAPP183.P	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/18732	International filing date (day/month/year) 10 JULY 2000	Priority date (day/month/year) 09 JULY 1999
International Patent Classification (IPC) or national classification and IPC IPC(7): G06F 17/30 and US Cl.: 707/205		
Applicant WILD FILE, INC.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>0</u> sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 29 NOVEMBER 2000	Date of completion of this report 17 SEPTEMBER 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer SCOTT T. BADERMAN <i>James R. Matthews</i>
Facsimile No. (703) 305-3230	Telephone No. (703) 305-4644

I. Basis of the report**1. With regard to the elements of the international application:***

- ☒ the international application as originally filed
- ☒ the description:
pages 1-13 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the claims:
pages 14-16 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the drawings:
pages 1-5 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the sequence listing part of the description:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets-fig NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

*** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).**

****Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.**

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/18732

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)	Claims	<u>3, 4, 6, 8 and 9</u>	YES
	Claims	<u>1, 2, 5 and 7</u>	NO
Inventive Step (IS)	Claims	<u>3, 4, 6, 8 and 9</u>	YES
	Claims	<u>1, 2, 5 and 7</u>	NO
Industrial Applicability (IA)	Claims	<u>1-9</u>	YES
	Claims	<u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 3, 4, 6, 8 and 9 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest "incorporating desired close proximity information of various OS visible pages into an algorithm executed by the engine that determines what is actually swapped, in order to reasonably maintain physical close proximity of data allocated by the OS but physically remapped by the engine."

Claims 1, 2, 5 and 7 lack the novelty under PCT Article 33(2) as being anticipated by Stockman et al. (U.S. Pat. No. 5,778,392).

As in claims 1, 5 and 7, Stockman et al. discloses a method and system for de-fragmenting (re-organizing) file allocations on a disk that comprises the steps and means for determining what pages should be swapped (goal tile map) among the various allocations made by the operating system (OS), wherein the OS's file system mapping is updated to reflect the swapped pages (current tile map) and a history of the original state prior to any update recorded by an engine (original tile map), wherein the swaps are performed by manipulation of the engine's data structures and/or actually exchanging data on the disk where OS visible data is read and written but the original state of each altered page is not directly recorded in an historic log, but instead, a record (copy of the original directory structure) is additionally logged of the location of the swapped data so that an image of the OS visible data can be reconstructed prior to the time of the de-fragmentation by knowing what data to effectively re-swap and what OS mapping data to effectively restore (Figure 3B, column 14: line 28 - column 15: line 11).

As in claim 2, Stockman et al. discloses the method and system above wherein the method is performed on a computer wherein a history of data is maintained such that the computer can be returned to a state of data from an earlier point in time (column 14: lines 56-61).

----- NEW CITATIONS -----
NONE

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claims 1-8 are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof:

In claim 1, line 3 "the operating system" should be "an operating system".

In claim 1, line 5 "the engine" should be "an engine".

In claim 1, line 6 "the" should be inserted before "disk".

In claim 1, line 8 "the historic log" should be "a historic log".

In claim 1, line 10 "the" should be inserted before "time".

In claim 2, line 2 "the" (first occurrence) should be "that".

In claim 3, line 3 "the algorithm" should be "an algorithm".

In claim 4, line 2 "the" (first occurrence) should be "that".

Claim 5 should be re-written such that all of the limitations are recited independently of claim 1.

Claim 6 should be re-written such that all of the limitations are recited independently of claim 3.

In claim 7, line 3 "the operating system" should be "an operating system".

In claim 7, line 5 "the engine" should be "an engine".

In claim 7, line 7 "the" should be inserted before "disk".

In claim 7, line 8 "the historic log" should be "a historic log".

In claim 7, line 10 "the" should be inserted before "time".

In claim 7, lines 10-11 "the defragmentation" should only be "defragmentation".

In claim 8, line 1 "1" should be "7".

In claim 8, line 2 "the algorithm" should be "an algorithm".

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 749.011W01	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US00/18732	International filing date (day/month/year) 10 JULY 2000	(Earliest) Priority Date (day/month/year) 09 JULY 1999
Applicant ADAPTEC. INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
 - ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established by this Authority to read as follows:

OPTIMIZED DISK STORAGE DEFRAGMENTATION WITH SWAPPING CAPABILITIES

5. With regard to the abstract,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 3a

- ☐ as suggested by the applicant.
- ☒ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18732

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A method of de-fragmenting file allocations on a disk (Figure 3a) to enable an operating system to determine what pages (Figure 3a, 1-12) should be swapped. The method tracks prior states of page maps (Figure 1 and 2) and logs the locations of the swapped data so that a state prior to a defragmentation activity can be reconstructed.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18732**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :G06F 17/30

US CL :707/205

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/200-206; 714/21

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST, IEEE Online, ACM Online, DialogWeb

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,761,680 A (COHEN et al.) 02 June 1998, Abstract; Figure 3; column 5, lines 35 through column 6, line 11; claims 1-3	1-9
X	US 5,778,392 A (STOCKMAN et al.) 07 July 1998, Abstract; Figure 3B; column 7	1-9
X	Rodriguez-Rivera et al., Proceedings of the International Symposium on Memory Management, Vancouver, Canada, October 17-19, 1998, pages 79-85, especially Figure 3 and pages 82-83 - footprint reduction	1-9

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

16 AUGUST 2000

Date of mailing of the international search report

16 NOV 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

HOSAIN T. ALAM

Telephone No. (703) 308-6662

**(19) World Intellectual Property Organization
International Bureau**



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

(43) International Publication Date
18 January 2001 (18.01.2001)

PCT

(10) International Publication Number
WO 01/04801 A1

- (51) **International Patent Classification⁷:** **G06F 17/30**

(21) **International Application Number:** PCT/US00/18732

(22) **International Filing Date:** 10 July 2000 (10.07.2000)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**
60/143,248 9 July 1999 (09.07.1999) US

(71) **Applicant (for all designated States except US):** **WILD FILE, INC.** [US/US]: P.O. Box 47038, 3070 Ranchview Lane, Plymouth, MN 55447 (US).

(71) **Applicant and**

(72) **Inventor:** **SCHNEIDER, Eric, D.** [US/US]: 17020 12th Avenue North, Plymouth, MN 55447 (US).

(74) **Agent:** **PENILLA, Albert, S.;** Martine Penilla & Kim, LLP, 710 Lakeway Drive, Suite 170, Sunnyvale, CA 94085 (US).

(81) **Designated States (national):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) **Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

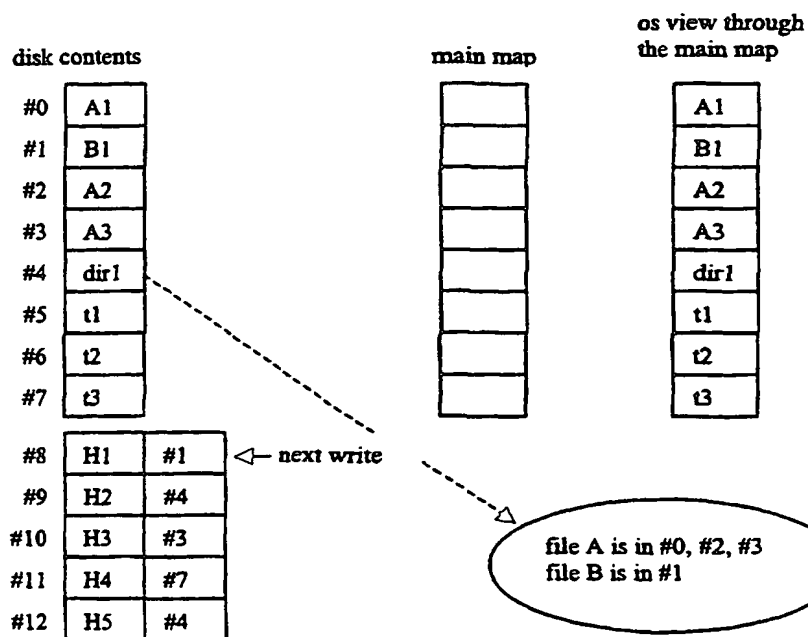
 - *With international search report.*
 - *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

Published:

- *With international search report.*
- *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

[Continued on next page]

- (54) Title:** OPTIMIZED DISK STORAGE DEFRAGMENTATION WITH SWAPPING CAPABILITIES



(S7) Abstract: A method of de-fragmenting file allocations on a disk (Figure 3a) to enable an operating system to determine what pages (Figure 3a, 1-12) should be swapped. The method tracks prior states of page maps (Figure 1 and 2) and logs the locations of the swapped data so that a state prior to a defragmentation activity can be reconstructed.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.